Dixon Sand (No.1) Pty Ltd

Haerses Road Quarry, Maroota

Noise monitoring report
June 2026

Doc no. 19020-NV-RP-25-2



Dixon Sand (No.1) Pty Ltd
Haerses Road Quarry, Maroota

Title	Noise Monitoring Report
Document no.	19020-NV-RP-25-1
Revision	2
Date	11 September 2026
Author	George Kinezos
Reviewer	John Hutchison

Hutchison Weller Pty Ltd
ABN 37 001 024 095
13/357 Military Road
Mosman NSW 2008

www.hutchisonweller.com

Revision history

0	03/08/2026	Draft

Table of Contents

Definition of terms ..... **ii**

1. Introduction **1**

2. Noise compliance criteria **3**

3. Monitoring methodology **4**

4. Monitoring results **5**

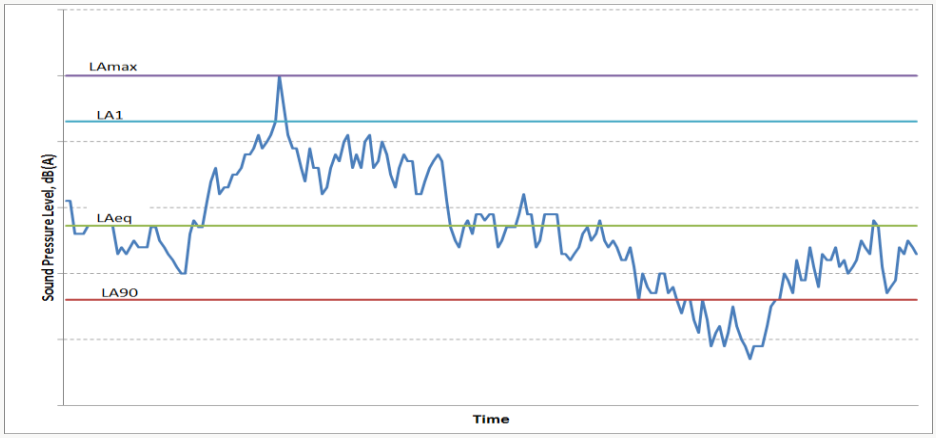
4.1 Attended measurements 5

4.2 Modifying factors 5

4.3 Extrapolated measurements 9

4.4 Compliance summary 11

Definition of terms

Background noise	The underlying level of noise present in the ambient noise, excluding the noise source under investigation.
Decibel (dB)	A measure of sound equivalent to 20 times the logarithm (to base 10) of the ratio of a given sound pressure to a reference pressure, and 10 times the logarithm (to base 10) of the ratio of a given sound power to a reference power.
dB(A)	Unit used to measure 'A-weighted' sound pressure levels. A-weighting is an adjustment made to sound-level measurement to approximate the response of the human ear.
dB(C)	Unit used to measure 'C-weighted' sound pressure levels, an adjustment made to sound level to approximate low frequency noise between 10 Hz and 200 Hz.
EPA	Environment Protection Authority
Extraneous noise	Noise resulting from activities that are not typical of the area such as construction, and traffic generated by holiday periods or special events such as concerts or sporting events. Normal daily traffic is not considered to be extraneous.
Noise level statistics	L_{A90} – The A-weighted sound pressure level exceeded 90% of the monitoring period. This is considered to represent the background noise. L_{Aeq} – The equivalent continuous A-weighted noise level—the level of noise equivalent to the energy average of noise levels occurring over a measurement period. L_{A1} – The A-weighted sound pressure level exceeded 1% of the monitoring period. L_{Amax} – The maximum A-weighted noise level associated with the measurement period. 
RBL	The Rating Background Level for each period is the medium value of the ABL values for the period over all the days measured. There is therefore an RBL value for each period (day, evening and night)
Receiver	The land use at which noise is heard
SLM	Sound Level Meter
Sound Power Level (SWL)	The A-weighted sound power level is a logarithmic ratio of the acoustic power output of a source relative to 10^{-12} watts and expressed in decibels. Sound power level is calculated from measured sound pressure levels and represents the level of total sound power radiated by a sound source.
Sound Pressure Level (SPL)	This is the level of noise, usually expressed in dB(A), as measured by a standard sound level meter (SLM) with a pressure microphone. The sound pressure level in dB(A) gives a close indication of the subjective loudness of noise. A technical definition for the sound pressure level, in decibels, is 20 times the logarithm (base 10) of the ratio of any two quantities related to a given sound pressure to a reference pressure (typically 20 µPa equivalent to 0 dB).
Tonal noise	Noise with perceptible and definite pitch or tone

1. Introduction

Dixon Sand (No.1) Pty Ltd operates the Haerses Road Quarry in Maroota, NSW (the Quarry). The Quarry is located off Wisemans Ferry Road, as illustrated in Figure 1.

Operations at the Quarry include extraction of sand and sandstone blocks, processing by screening and grading and loading of trucks for shipment.

The Quarry operates under Development Consent DA 165-7-2005 and Environment Protection Licence (EPL) 12513, which set noise limits for its operation. Extraction in the areas described in Modification 1 of the development consent and utilisation of the processing plant area commenced in December 2019 and require attended noise monitoring on a six-monthly basis to ensure compliance with the conditions.

Hutchison Weller was commissioned by Dixon Sand to undertake the six-monthly noise monitoring in accordance with the conditions of consent, EPL and requirements of the Noise Management Plan.

This document outlines the consent conditions, monitoring methodology and results of the monitoring undertaken on 11 June 2026.

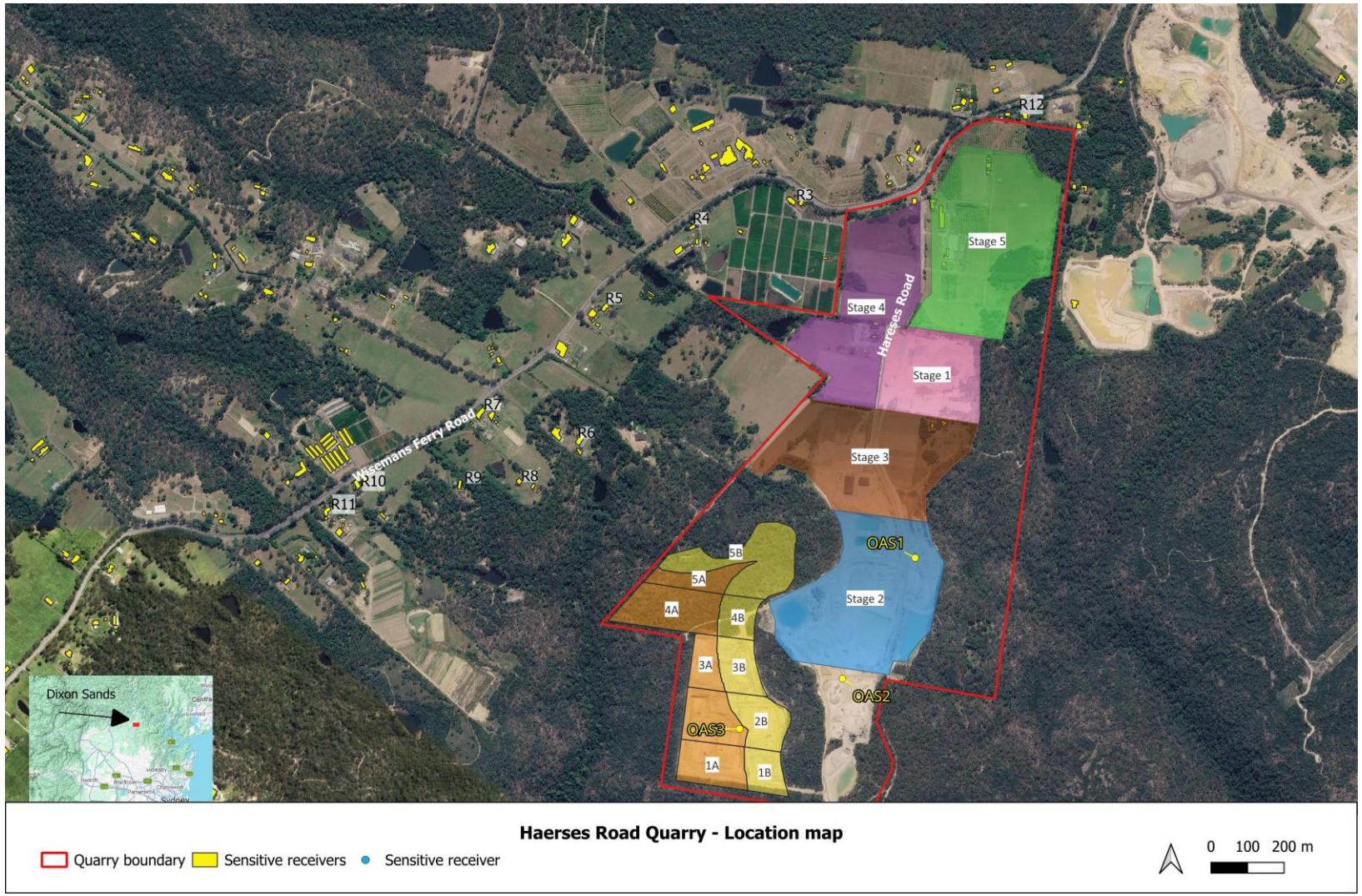


Figure 1 Location of the Quarry

2. Noise compliance criteria

Conditions 1 and 2 of Schedule 3 of development consent DA 165-7-2005 outline the Quarry operating hours and condition 3 defines the noise criteria for compliance.

1. The Applicant must comply with the operating hours set out in Table 1.

Table 1 Operating hours

Activity	Permissible hours
Quarrying operations (excluding truck arrival, loading and dispatch)	7.00 am to 6.00 pm Monday to Saturday At no time on Sundays or public holidays
Truck arrival, loading and dispatch	6.00 am to 6.00 pm Monday to Saturday At no time on Sundays or public holidays
Acoustic bund construction and road and intersection works on Haerses Road and Wisemans Ferry Road	8.00 am to 5.00 pm Monday to Friday. At no time on Saturdays, Sundays, or public holidays
Maintenance	At any time, provided that these activities are not audible at any privately-owned residence outside of permissible hours for quarrying operations.

2. The following activities may be carried out outside the hours specified in condition 1 above:

(a) delivery or dispatch of materials as requested by the NSW Police Force or other public authorities; and
(b) emergency work to avoid the loss of lives, property or to prevent environmental harm.

In such circumstances, the Applicant must notify the Secretary and affected residents prior to undertaking the activities, or as soon as is practical thereafter.

3. The Applicant must ensure that the noise generated by the development (excluding acoustic bund construction) does not exceed the criteria in Table 2 at any residence on privately-owned land.

Table 2 Noise criteria dB(A)

Receiver	Day	Shoulder (6.00 am to 7.00 am)	
	LAeq (15 minute)	LAeq (15 minute)	LAmax
R05, R06	41	35	52
R03	40	37	
R13, R14	40	36	
All other receivers	40	35	

Noise generated by the development must be measured in accordance with the relevant requirements and exemptions (including certain meteorological conditions) of the NSW Noise Policy for Industry.

However, the noise criteria in Table 2 do not apply if the Applicant has an agreement with the relevant landowner to exceed the noise criteria, and the Applicant has advised the Department in writing of the terms of this agreement.

Agreements are currently in place between Dixon Sand and adjacent private landowners including:

- Residential receivers identified as R2 and R12 in the planning consent and
- All identified receivers to the east of Haerses Road quarry on Hitchcock Road

3. Monitoring methodology

Operator-attended noise monitoring was undertaken on 11 June 2026 by George Kinezos of Hutchison Weller, an independent acoustic specialist. Monitoring locations were selected in line with the Haerses Road Quarry Noise Management Plan (Jan 2024), which addresses specific stages of quarry development, as outlined in Section 2. Monitoring locations are illustrated in Figure 1 and specific addresses are summarised in Table 4.

Table 3 Noise monitoring locations for each stage and extraction cell (from Noise and Vibration Management Plan, 2024)

Location	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Mod 1, Extraction cells 1A to 5B
R1	-	-	-	-		-
R3	✓	✓	✓	✓	✓	-
R4	✓	✓	✓	✓	✓	-
R6	-	-	-	-	-	✓
R8	-	-	-	-	-	✓

Table 4 Monitoring locations

Receiver	Address	Description
R3	1643 Wisemans Ferry Road	Private residence adjacent to plant nursery
R6	1543 Wisemans Ferry Road	Private residence. Monitoring conducted on the southeastern side of the residence facing the quarry.
R8	1521 Wisemans Ferry Road	Private residence. Monitoring conducted at boundary between R7 and R8 since no access granted to R8.

Monitoring was conducted in general accordance with the Noise Policy for Industry and Section 6 of the Noise Management Plan. At-receiver monitoring locations were within 30 metres of residential dwellings, whilst onsite measurement locations were selected for safe access and to be representative of the operations, without extraneous noise from sources such as traffic and insects.

Instrumentation was a Bruel & Kjaer Class 1 sound level meter (SLM), serial no. 3008237, field-calibrated prior to and following monitoring. The SLM was within current calibration, next due September 2027.

Monitoring was undertaken with the SLM set on a tripod at 1.5 metres above ground and measuring A-weighted sound pressure levels under fast response. Each measurement period was 15 minutes and recorded the L_{Aeq}, L_{A90} and L_{Amax} statistics.

Meteorological data was recorded during each monitoring period adjacent to the Maroota public school, including wind speed, direction, temperature, relative humidity, and sigma-theta (to establish the Pascall-Guifford stability category). This data was used to establish whether meteorological conditions were suitable for monitoring.

Where extraneous noise such as road traffic or insects were the dominant noise sources, making it impractical to discern the contribution of the Quarry to ambient noise levels, noise levels measured at alternative locations closer to the Quarry were utilised, in line with procedures outlines in *Noise Policy for Industry*. This involved extrapolation from the near-distance location to the sensitive receiver location.

4. Monitoring results

4.1 Attended measurements

Results of noise monitoring for each location are presented in Table 5.

Quarry operations were inaudible at all monitoring locations prior to 7am, with traffic noise on Wisemans Ferry Road in all cases the dominant source of noise. No L_{Amax} noise levels were attributable to the quarry in the shoulder period.

During the day period, quarry noise was inaudible or just audible at monitoring locations. Again, ambient noise masked noise from the quarry.

Based on measured noise at each location, the Haerses Road quarry was compliant with the project noise objectives.

On-site measurements were taken to determine the noise level of various noise sources without the influence of traffic noise. Measurements were undertaken to establish representative sound pressure levels of the operation to allow extrapolation to receiver locations where background noise was too high to discern quarry noise contributions. This is discussed further in Section 4.3.

4.2 Modifying factors

No tonal, impulsive, or low frequency noise characteristics were observed at any residential monitoring location during the monitoring period. Therefore, application of modifying factors is not appropriate in this instance.

Table 5 Monitoring results

Monitoring period	Time	Location	Noise criterion	Measured 15-minute noise level			Estimated $L_{Aeq,\ 15\ min}$ quarry contribution	Observations	Meteorological conditions
				L_{Aeq}	L_{A90}	L_{Amax}			
At-receiver measurements									
Shoulder (6.00am to 7.00am)	6:45 AM	R3	37	35	32	65	<40	**Quarry Inaudible** Dominant noise: Road traffic noise on Wiseman Ferry Road (WFR) • Trucks 54-59 dBA • Light vehicles 46-49 dBA Other noise: birds Ambient noise level 35-36 dBA during lulls in road traffic noise.	Clear skies NNW to W 0 - 3km/h. Stable conditions, (A class), 9-13 C
	6:18 AM	R6	35	38	27	75	<41	**Quarry Inaudible** Dominant noise: Road traffic noise WFR • Trucks up to 75 dBA • Light vehicles 57-62 dBA Other noise: birds Ambient noise level 35-37 dBA during lulls in road traffic noise.	
	6.30 AM	R8	35	35	27	65	<40	**Quarry Inaudible** Dominant noise: Road traffic noise WFR 46 to 50 dBA Other noise: birds 63-67 Ambient noise level 34-36 dBA during lulls in road traffic noise.	

Onsite measurements									
Onsite	8:27 AM	OAS1	N/A	66	63	80	66	Audible site noise: Site 3B operations • Dozer moving material at 100m from measurement location • Moxy 100m from measurement location. Both of these sources were the dominate noise source during the measurement with levels fluctuating between 63 – 75 dBA	Clear skies NNW to W 0 - 3km/h. Stable conditions, (A class), 9-13 C
	8:40 AM	OAS2	N/A	68	65	85	68	Audible site noise: • Excavator moving material into screener at 90m from measurement location • Dozer moving material also into screener at approximatly 95m from the measurement location All of these sources were the dominate noise sources during the measurement period with levels fluctuating between 70 – 77 dBA	
	9:05 AM	OAS3	N/A	67	60	83	67	Audible site noise: • 2x Excavators hammering to the east of the measurement location both of these machines were situated approximately 80m from the measurement location • 1x Excavator hammering to the north west of the measurement location at a distance of approximately 110m • Dozers and other various light vehicles were also operating and moving around the measurement location intermittently	

At-receiver measurements									
Day (7.00am to 6.00pm)	9:20 AM	R3	40	67	37	88	<40 (See Section 4.3)	Quarry inaudible, dominate noise source was traffic, when traffic was not present - ambient noise dropped to 39 dBA Dominant noise: Road traffic WFR 64-69 dBA. Other noise: • Distant traffic 41 dBA • Ambient noise level 39 dBA during lulls in road traffic noise.	Clear skies NNW to W 0 - 3km/h. Stable conditions, (A class), 9-13 C
	9:45 AM	R6	41	60	42	91	<41 (See Section 4.3)	Quarry inaudible, the dominant noise road traffic WFR. Light vehicles up to 67 dBA. Heavy vehicles up to 90 dBA. Other noise: • Ambient noise level 39-44 dBA during lulls in road traffic noise. Access restricted. Measurements completed at the gate.	
	10:38 AM	R8	40	58	44	87	<40 (See Section 4.3)	Quarry inaudible, the dominant noise road traffic WFR. Light vehicles up to 63-68 dBA. Heavy vehicles up to 87 dBA. Other noise: • Ambient noise level 39-44 dBA during lulls in road traffic noise. Access restricted. Measurements completed at the gate.	

4.3 Extrapolated measurements

Based on attended measurements, a conclusive quarry-specific noise level could not be established at all locations due to the influence of ambient noise sources. Accordingly, measurements were undertaken at locations where quarry activities were clearly audible and representative of operational noise emissions.

During the monitoring period, the dominant noise sources observed at each attended measurement location were as follows:

OAS1

- Dozer moving material (approximately 100 m from the measurement location)
- Moxy haul truck operating (approximately 100 m from the measurement location)

These sources were the dominant contributors to the measured noise environment, with noise levels fluctuating between approximately 63 and 75 dB(A).

OAS2

- Excavator loading material into a screener (approximately 90 m from the measurement location)
- Dozer moving material adjacent to the screener (approximately 95 m from the measurement location)

These activities dominated the noise environment during the measurement period, with noise levels fluctuating between approximately 70 and 77 dB(A).

OAS3

- Two excavators hammering to the east of the measurement location (approximately 80 m away)
- One excavator hammering to the north-west of the measurement location (approximately 110 m away)
- Intermittent operation of dozers and light vehicles within the surrounding work area

Noise measurements undertaken in the vicinity of these activities were used to establish a representative noise model of quarry operations.



Figure 2 Work areas and noise sources included in the model

Predictions of noise at nearby receivers were based on measured onsite noise levels and propagation methods described in ISO 9613-2:1996 *Acoustics — Attenuation of sound during propagation outdoors — Part 2: General method of calculation,* which accounts for geometric spreading, air and ground absorption as well as barrier effects, assuming worst case meteorology of a gentle breeze from source to receiver and stable conditions. The site topography was based on a recent survey undertaken by Dixon Sands.

Based on the above, modelled noise levels for each monitoring location are presented in Table 6. Results are shown for equipment operating in each quarry area and processing plant. Modelled noise levels are within 2 dB of measured values indicating the model is sufficiently accurate to represent operating conditions.

Table 6 Extrapolated monitoring results to intermediate measurement locations

Location	Modelled noise level, dBA	Measured noise level, LAeq, 15 minute, dBA
OAS1	65	66
OAS2	67	68
OAS3	68	67

Based on measurements described in Table 5, extrapolated noise results for each receiver are presented in Table 7. Results are shown for all equipment operating. Extrapolated results demonstrate the Quarry is compliant with the criteria for shoulder and daytime operations (within 2 dB) when all observed equipment is operating. Extrapolated contours are shown in Figure 3.

Table 7 Extrapolated monitoring results

Receiver	Noise criteria	Extrapolated noise level, LAeq, 15 minute
R3	40	38
R4	40	39
R6	41	40
R8	40	40
All other receivers	40	See Figure 3

4.4 Compliance summary

Results of attended monitoring and extrapolated noise levels demonstrate observed operations during shoulder and day periods were compliant with the noise criteria at each receiver under the meteorological conditions at the time.

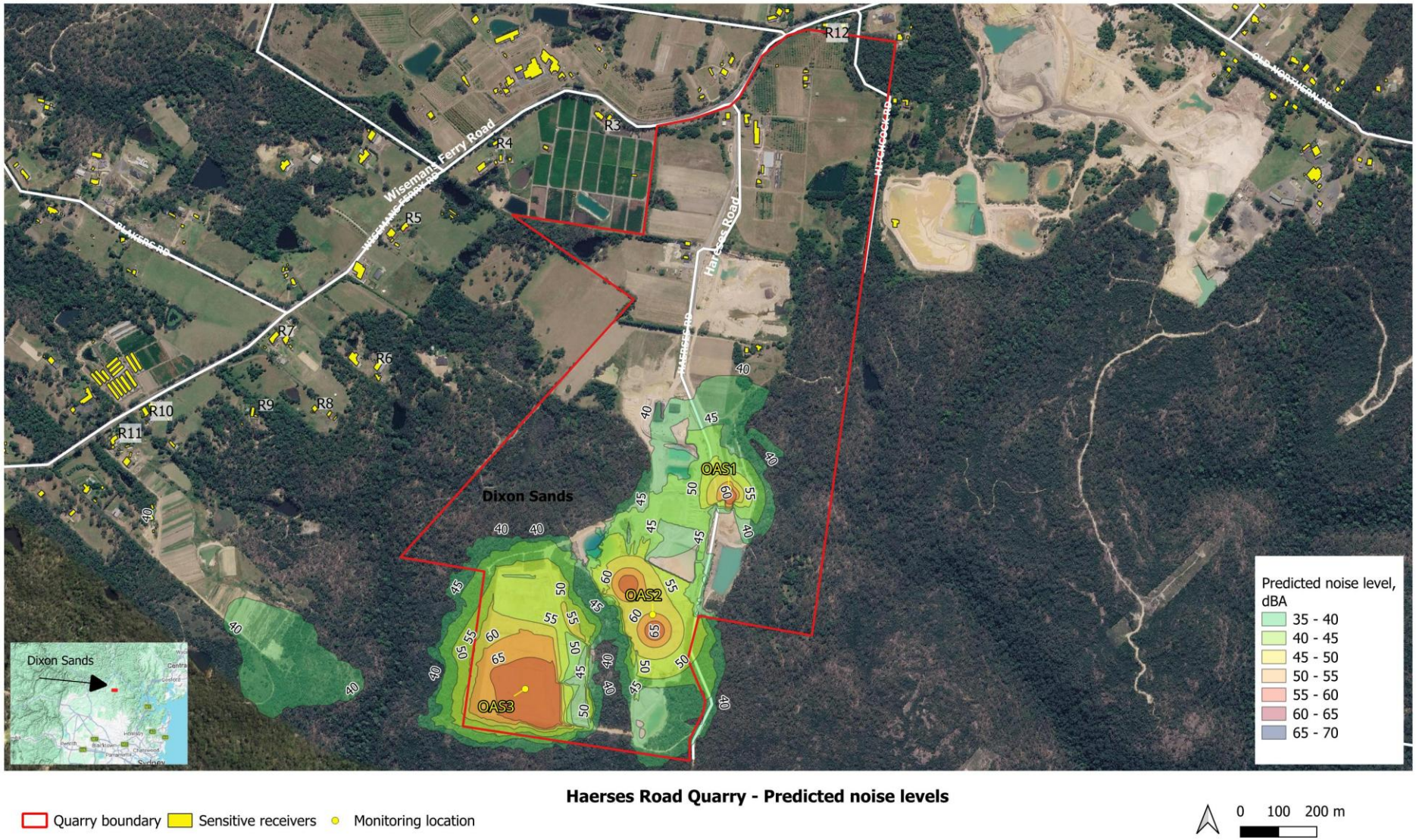


Figure 3 Extrapolated noise levels from Haerses Road quarry based on on-site measurements.